

U.S. Patent Application Serial No. 10/560,619
Response filed October 10, 2007
Reply to OA dated July 16, 2007

REMARKS

Claims 1-10 are pending in this application. No amendment is made in this Response. It is believed that this Response is fully responsive to the Office Action dated **July 16, 2007**.

Claims 1-5, 7-8 remain rejected under 35 U.S.C. §103(a) as being unpatentable over Hoff et al. (U.S. Patent No. 6,066,394) in view of Gyobu et al. (U.S. Patent No. 6,242,560 B1) and Matsumoto et al. (U.S. Patent No. 6,174,943 B1). (Office action paragraph no. 4)

Claims 1-8 remain rejected under 35 U.S.C. §103(a) as being unpatentable over Matsumoto et al. (JP 10046099 A) in view of Gyobu et al. (U.S. Patent No. 6,242,560 B1) and Matsumoto et al. (U.S. Patent No. 6,174,943 B1). (Office action paragraph no. 5)

Claims 1 and 4-8 are rejected under 35 U.S.C. §103(a) as being unpatentable over Komori et al. (JP 2002088343 A) in view of Gyobu et al. (U.S. Patent No. 6,242,560 B1) and Matsumoto et al. (U.S. Patent No. 6,174,943 B1). (Office action paragraph no. 6)

Claim 10 is rejected under 35 U.S.C. §103(a) as being unpatentable over Hoff et al. (U.S. Patent No. 6,066,394) or Komori (JP 2002088343 A) or Matsumoto et al. (JP 10046099 A) each individually, in view of Gyobu et al. (U.S. Patent No. 6,242,560 B1) and Matsumoto et al. (U.S. Patent No. 6,174,943 B1) as applied to claims mentioned above, and further in view of Masaru et al. (JP 06-079737). (Office action paragraph no. 7)

U.S. Patent Application Serial No. 10/560,619

Response filed October 10, 2007

Reply to OA dated July 16, 2007

Applicant respectfully maintains the traversals of these rejections from the previous Response. Reconsideration of the rejections is requested. Applicant here responds to the Examiner's response in the final Office action to Applicant's previous arguments, and in particular, Applicant amplifies the previous arguments that there are **unexpected results** associated with the present invention.

Specifically, at the bottom of page 5 of the Office action, the Examiner comments on Applicant's previous "unexpected results" argument, which was intended to overcome the rejection if there were a *prima facie* case of obviousness. The Examiner states that:

"However, the showing in the table on page 25 is not commensurate in scope with claim 1. The properties (detergent resistance, oil resistance and tensile strength) in example 1 and 2 are inferior to the comparative example 3 based on the properties desired by the invention (paragraph 0077)."

That is, the Examiner appears to be stating that Applicant has not shown any improved performance over the Comparative examples.

Applicant respectfully disagrees and here reviews the "unexpected results" argument in detail.

Review of Applicant's "unexpected results" argument

Base claim 1 requires as one component a crosslinkable monomer having a molecular weight of not less than 280. Applicant again submits that the combination of the crosslinkable monomer having a molecular weight of not less than 280 with the other recited components produces a

U.S. Patent Application Serial No. 10/560,619

Response filed October 10, 2007

Reply to OA dated July 16, 2007

composition that has well balanced practical characteristics of tensile strength, elongation, alcohol resistance, detergent resistance, oil resistance and recovering property after stretching or wearing.

Applicant below presents Table A, which provides the data from Table 1 of page 25 of the specification, along with a new final column summarizing the number of items not satisfying the performance criteria. To help in understanding the data, underlines are also provided below the values in the Table which do not satisfy the performance criteria.

U.S. Patent Application Serial No. 10/560,619
 Response filed October 10, 2007
 Reply to OA dated July 16, 2007

Table A

Ex.	Composition of monomers				Composition of crosslinkable monomers		Tg (°C)	Thickness (mm)	Performance							Number of items not satisfying the criteria					
	(1)	(2)	(3)	(4)	(4)	(4)	PDE-GMA	10APB	500B	100	148	148	148	148	148	148					
Comp. Ex.	BA	2EHA	AN	AA	PTMG-DEP	TD-EVA	10APB	500B	100	148	148	148	148	148	148	148	148				
Molecular weight																					
Criteria																					
Ex. 1	71	26	2			1				-52	0.09	14.6	1.1	585	7.4	47	33	9	0	2	
Ex. 2	71	26	2			1				-52	0.14	14.8	2.5	509	6.5	52	40	14	△	3	
Ex. 3	71	26	2	1						-52	0.14	16.5	1.6	543	8.0	7.9	58	9.0	◎	1	
Ex. 4	70.25	26	2			1.75				-50	0.14	18.1	1.6	547	7.4	6.6	64	13	○	2	
Ex. 5	70	26	2	1		0.5	0.5			-49	0.12	20.6	2.2	525	10.0	8.5	80	13	◎	1	
Ex. 6	72	25	2	1						-53	0.13	17.5	1.4	541	7.6	5.8	6.7	8	◎	0	
Ex. 7	71	25	2	1		0.5	0.5			-50	0.12	18.9	1.9	512	7.2	6.8	63	9	◎	1	
Ex. 8	71.75	25	2	0.75		0.5				-52	0.13	19.1	1.4	589	7.6	7.3	6.5	8	◎	0	
Comp. Ex. 1 (Commercialized acryl (containing a plasticizer))										0.3	7.6	12	352	2.0	46	7.6	10	x	4		
Comp. Ex. 2	83	15	2							-38	0.11	12.6	0.5	599	2.3	1.7	8.9	4	x	3	
Comp. Ex. 3	71	26	2							1	-52	0.13	21.9	4.2	391	2.5	8.3	58	33	x	5
Comp. Ex. 4	72	26	2							-54	0.12	17.2	2.9	533	7.3	64	54	20	x	4	
Comp. Ex. 5	71	26	2							1	-52	0.14	5.2	2	740	3.3	14	15	3	x	4

BA: butyl acrylate
 2EHA: 2-ethylhexyl acrylate
 AN: acrylonitrile
 AA: acrylic acid
 PTMG-DEP: poly(tetramethylene ether) glycol diglycidyl ether
 TD-EVA: 3-alkoxy-2-hydroxypropyl acrylate
 10APB-500B: propylene glycol polybutylene glycol monoacrylate
 PDE-100: diethylene glycol dimethacrylate
 GMA: glycidyl methacrylate

U.S. Patent Application Serial No. 10/560,619
Response filed October 10, 2007
Reply to OA dated July 16, 2007

In the above Table A, Examples 1 to 8 use the crosslinkable monomers having a molecular weight of not less than 280 while Comparative Examples 1 to 5 do not use the crosslinkable monomers or use the crosslinkable monomers having a molecular weight of less than 280.

As apparent from Table A, in Examples 3, 5 to 8, the number of items not satisfying the criteria is two or less and the alienation from the criteria of the parameters not meeting the criteria is small, and as a whole, those are evaluated as comprehensively very good (marked "◎").

In Examples 1 and 4, the number of items not satisfying the criteria is two or less and the alienation from the criteria is relatively small and those are evaluated as comprehensively good (marked "○").

In Example 2, the number of items not satisfying the criteria is three or more but the alienation from the criteria is relatively small and it is evaluated as comprehensively slightly bad (marked "△").

However, in Comparative Examples 1 to 5, **the number of items not satisfying the criteria is three or more and the alienation from the criteria is large** and those are evaluated as comprehensively bad (marked "X").

To summarize, **Examples 1 to 8** using the crosslinkable monomers having a molecular weight of not less than 280 **have well-balanced performances**, while **Comparative Examples 1 to 5** not using the crosslinkable monomers or using the crosslinkable monomers having a molecular weight of less than 280 **do not have well-balanced performances**.

U.S. Patent Application Serial No. 10/560,619
Response filed October 10, 2007
Reply to OA dated July 16, 2007

Applicant further submits that the observed effect is **fully commensurate** with the claim limitation of "molecular weight not less than 280." In the above Table A, Examples 1 to 3 use 1 part of a crosslinkable monomer having a molecular weight of not less than 280 and Comparative Examples 3 and 5 use 1 part of a crosslinkable monomer having a molecular weight of less than 280, and Examples 1 to 3 and Comparative Example 3, 5 comprise the same monomeric compositions. Accordingly, a difference in effects between "not less than 280" and "less than 280" in molecular weight of the crosslinkable monomers employed can be known from the comparison of Examples 1 to 3 and Comparison Examples 1, 5.

First, in Examples 1 to 3, the numbers of items not satisfying the criteria are 2, 3 and 1, respectively, while in Comparative Examples 3 and 5, numbers of items not satisfying the criteria are 5 and 4, respectively, and thus, Examples 1 to 3 are superior to comparative Examples 3 and 5.

More specifically, Example 1 uses TD-EXA (Molecular weight: 330) and Comparative Example 5 uses PDE-100 (Molecular weight: 260). In Example 1, the number of items not satisfying the criteria is 2 while in Comparative Example 5, number of items not satisfying the criteria is 4 and thus Example 1 is by far superior to Comparative Example 5. The criticality of the limitation of "molecular weight of not less than 280" of the crosslinkable monomers is exhibited by the comparison of Example 1 with Comparative Example 5.

Further arguments in response to Examiner's arguments

The Examiner states on page 5 of the Office Action:

U.S. Patent Application Serial No. 10/560,619
Response filed October 10, 2007
Reply to OA dated July 16, 2007

"In response to applicant's argument that there is no motivation or suggestion to combine, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, epoxy compound "F" of Matsumoto et al is used to raise solvent resistance and is suggested as an unexpected and superior result in table on page 25 of present invention. It is noted that applicant's intended to show unexpected result to overcome the obviousness rejection of claim 1. However, the showing in table on page 25 is not commensurate in scope with claim 1. The properties (detergent resistance, oil resistance and tensile strength) in example 1 and 2 are inferior to the comparative example 3 based on the properties desired by the invention (paragraph 0077) ."

Matsumoto et al. '943 discloses a flame-retardant thermoplastic resin composition which exhibits an excellent flame retardance and an excellent dripping resistance without containing a halogen atom, and moreover, which is also excellent in heat resistance, mechanical strength, solvent resistance, surface property of moldings and dimensional stability.

First, Matsumoto et al. '943 is directed to a thermoplastic resin comprising (A) a polycarbonate resin and (B) an aromatic polyester resin, while the present invention is directed to an acrylic polymer emulsion and a glove made therefrom, and thus, the both inventions essentially differ in technical fields.

Second, Matsumoto et al '943 disclose, "The flame retardant resin composition may contain (F) an epoxy compound for the purpose of raising the solvent resistance, etc. (Col. 13, lines 6 to 9). Lots of examples of the epoxy compound (F) are mentioned at column 13, lines 24 to 42, including polytetramethylene glycol diglycidyl ether having a molecular weight of not less than 280 and glycidyl methacrylate having a molecular weight of less than 280, too.

U.S. Patent Application Serial No. 10/560,619
Response filed October 10, 2007
Reply to OA dated July 16, 2007

However, it would not be expected based on Matsumoto et al. '943, which only discloses using epoxy compounds to raise solvent resistance in a thermoplastic resin comprising a polycarbonate resin and an aromatic polyester resin, that if an epoxy compound functional as a crosslinkable monomer having a molecular weight of not less than 280 is selectively chosen and used in an acrylic polymer emulsion, the obtained acrylic polymer emulsion would have well-balanced performances such as tensile strength, elongation, alcohol resistance, detergent resistance, oil resistance, recovering property after a stretch and wearing touch, which are required for a glove.

Next, with respect to the comparison in properties of Examples 1 and 2 with Comparative Example 3, Examples 1 and 2 are indeed inferior to Comparative Example 3 in detergent resistance and oil resistance, but those properties of Examples 1 and 2 are not so far from the criteria and thus Examples 1 and 2 are still practically usable.

In contrast, in Comparative Example 3, normal tensile strength (modulus, elongation), alcohol resistance and ratio of elongation remaining after a stretch which are essential as properties for a glove are greatly far from the criteria and thus Comparative Example 3 is not practically usable.

If desired by the Examiner, Applicant would be happy to provide a demonstration of actual samples of films of the present invention. For example, the effect of the ratio of elongation parameter after stretch and elongation can be readily felt by pulling on sample films, and the relevance of these parameters to glove performance can be readily understood. If the Examiner believes that this would

U.S. Patent Application Serial No. 10/560,619
Response filed October 10, 2007
Reply to OA dated July 16, 2007

be useful, Applicant respectfully requests that the Examiner contact the Applicant to discuss whether a personal interview might be appropriate.

Superiority of a glove made from an acrylic polymer emulsion

The performance parameters discussed above are particularly significant in the performance of a glove, and claim 10 explicitly recites the structure of a glove. For example, in the case of an operation glove which is made from natural rubber or NBR, the pressure feel of the glove is strong at the time of being put on, and in consequence, fingers get tired during the course of operation usually taken for a long time. In contrast, a glove made from an acrylic polymer emulsion of the present invention is free of such drawbacks and it may be said that it realized compatibility of moderate pressure feel and fitting feel, that has been long awaited in this industry.

Further, a glove made from an acrylic polymer emulsion of the present invention is superior to that made from natural rubber, NBR and PVC in the following respects:

- (a) Since natural rubber is not used, there is no fear of latex allergy, and since a vulcanization agent and a vulcanization accelerator are not used, there is no fear of chemical allergy.
- (b) Since a solvent and a plasticizer are not used, it is ecologically friendly, does not require solvent recovery, and does not cause bleeding. In addition, since it does not contain a plasticizer, a degradation by hardening at the time of using a solvent does not take place.

U.S. Patent Application Serial No. 10/560,619
Response filed October 10, 2007
Reply to OA dated July 16, 2007

(c) Since the composition does not contain chlorine, it does not generate dioxin at the time of burning.

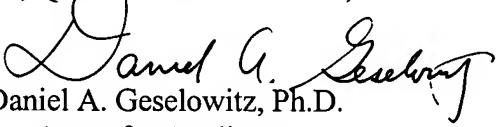
Again, Applicant maintains the argument that Applicant has adequately demonstrated "unexpected results" commensurate in scope with the limitations of base claim 1. Pending claims 1-10 are therefore not obvious over the cited references taken separately or in combination.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the Applicant's undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, the Applicants respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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